ABSTRACT OF THE DISCLOSURE

A method and an apparatus are disclosed for digital synthesis of signals having a frequency which is a rational factor n/m times an existing reference or clock frequency, wherein n and

5 m may be large relatively prime integers. The invention provides for the use of a periodic sequence generator having up to N taps which are connected to a cascade of digital commutating multiplexers. The periodic sequence generator and the commutating multiplexers have periodicities f_i *that* are determined by programmable address counters and the choice of N. The resultant signal at the output of the last commutator stage has a spectral

10 frequency component at a desired frequency which is an algebraic sum of the frequencies f_i (each taken with either positive or negative signs). One aspect of the invention provides for the use of weighted linear combination of commutator output lines, thereby further aiding in improving its spectral purity performance. The advantage of the embodiments according to the invention is that it incurs very little phase noise degradations, thereby providing for a

15 signal source with phase noise performance essentially equal to that of the reference signal.